Paper No. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK G. EDLUND,
JAMES R. CORNWELL
and
STEVEN A. RUSH

Appeal No. 1999-1254
Application 08/820,490

ON BRIEF

Before GARRIS, OWENS, and TIMM, Administrative Patent Judges.

PER CURIAM.

DECISION ON APPEAL

This is a decision on an appeal from the final rejection of claims 1-16, 20-21 and 28-30, which are all of the claims under consideration in this application.[1]

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[1]It is unclear whether nonelected claims 17-19 and 22-27 are cancelled or are pending but withdrawn from further consideration by the examiner. This lack of clarity should be

The subject matter on appeal is adequately illustrated by independent claim 1 which is reproduced below:

1. A process for the removal of mercury from materials and for the recovery of mercury comprising:

heating material which contains mercury to a temperature of at least 900°F in a heating zone to create a first gaseous phase which contains mercury,

directing said first gaseous phase at a temperature of at least 900°F to a first cooling unit which reduces the temperature of said gaseous phase by at least 100°F to a temperature which is above the boiling point of mercury,

collecting a first condensate which is condensed from said gaseous phase which enters into said first cooling unit and sending a second gaseous phase which contains mercury and which second gaseous phase is at a temperature above the boiling point of mercury to a second cooling unit, and

in said second cooling unit, reducing the temperature of said second gaseous phase to a temperature at least 100°F below the boiling point of mercury, collecting a condensate which comprises mercury, and sending a third gaseous phase out of said second cooling unit at a temperature which is at least 100°F below the boiling point of mercury.

The references relied on by the examiner are:

Sikander et al. (Sikander)	4,606,762	Aug. 19, 1986
Weyand et al. (Weyand)	5,300,137	Apr. 5, 1994

All of the claims on appeal stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Weyand in view of

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rectified upon return of the application to the jurisdiction of the Examining Corps.

Sikander. On consideration of the record, we cannot sustain the rejection before us on appeal.

BACKGROUND OF THE INVENTION

The subject matter on appeal relates to a process for the removal of mercury from materials and for the recovery of mercury.

According to the appellants, mercury is a serious form of pollution that can be introduced into the environment from manufactured goods. Mercury can be injurious in small doses that can be rapidly ingested from breathing contaminated air. Mercury cannot be deposited in solid waste landfills because of its known hazardous effects on the environment and current mercury disposal systems cannot fulfill the volume requirements of mercury waste treatment needs.

Also according to the appellants, the present mercury removal process solves the insufficiencies of prior methods for mercury waste management in an environmentally safe and economic manner. The claimed process heats mercury containing waste material (waste) producing a gaseous phase (vapor stream) and recovers mercury from the gaseous phase through repeated, controlled cooling of the gaseous phase in order to selectively collect condensate. See appellants' brief, page 7.

The gaseous phase is first cooled from a high temperature down to a temperature above the boiling point of mercury in order to remove pollutants other than the mercury. The gaseous phase
is then subsequently cooled to a temperature at least 100°F below the boiling point of mercury to collect mercury condensate.

OPINION

For the reasons that follow, we cannot sustain the examiner's rejection of the appealed claims.

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). To make out a case of obviousness, one must:

a) determine the scope and content of the prior art;

b) ascertain the differences between the prior art and the claims in issue; and

c) determine the level of skill in the pertinent art. Graham v. John Deere, 383 U.S. 1, 17 (1966). A prima facie case of obviousness is established when the teachings from the

prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. In re Bell, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993). Patentability of a claim under 35 U.S.C. § 103 must be premised upon considering the subject matter of a claim "as a whole." As recently stated in Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1629 (Fed. Cir. 1996), "[i]t is well-established that before a conclusion of obviousness may be made based on a combination of references, there must have been a reason, suggestion, or motivation to lead an inventor to combine those references." With this as background, we analyze the prior art applied by the examiner in the rejection of the claims on appeal.

Weyand discloses a method of removing mercury from soil and industrial wastes using a furnace that vaporizes the mercury and condenses the vapors to thereby collect mercury condensate. See Weyand Abstract. First, mercury waste is heated and maintained in the range of 600-1500°F in order to vaporize the mercury portion of the waste. The vapor is then condensed to substantially elemental mercury or mercury compounds and collected in a single condenser.

The examiner acknowledges that Weyand does not teach the use of a velocity drop box required by certain of the dependent claims. In order to supply this deficiency of the Weyand reference, the examiner relies upon Sikander.

The appellants argue that Weyand differs from the appealed claims in that Weyand uses only one cooling step at a temperature below the boiling point of mercury, while the here-claimed process comprises at least two cooling steps where the first cooling step is at a temperature above the boiling point of mercury. The appellants further argue that, although the Sikander reference does contain two cooling steps, both cooling steps are intended to collect mercury condensate from the vapor stream and therefore necessarily operate at a temperature below the boiling point of mercury. Finally, the appellants argue that, even if the two references were combined, the resulting process would not read on the appealed claims that are directed to at least two cooling steps, where the first cooling step is at a temperature above the boiling point of mercury.

We agree with the appellants' basic position that, even if one of ordinary skill in the art were to combine the

applied references, the resulting combination would not correspond to the process defined by the appealed claims. Specifically, the applied references whether taken individually or in combination would not have suggested the here-claimed step of directing the first gaseous phase to a first cooling unit which reduces the temperature of said gaseous phase by at least 100°F to a temperature which is above the boiling point of mercury. See Appellants' claim 1.

The examiner fails to rebut or even acknowledge the appellants' above-discussed argument. Instead, the examiner wrongly focuses on the number of process steps in the references. For example, the examiner states that Weyand suggests a two and three stage mercury removal/recovery process. See examiner's answer, page 4. While this may be true, it is clear that Weyand contains no teaching or suggestion of a cooling step at a temperature above the boiling point of mercury in accordance with the appealed claims. Similarly, the examiner is correct that Sikander discloses a two stage (step) cooling process, but the examiner fails to appreciate that the function of each cooling step of the Sikander process is to collect mercury condensate.

Because each of the cooling steps of the Sikander reference collects mercury condensate the temperature of those steps must be below the boiling point of mercury. Therefore, Sikander likewise contains no teaching or suggestion of the appellants' claimed step of cooling to a temperature above the boiling point of mercury.

Thus, even if combined, the applied references would not have yielded the here-claimed process having the cooling step under consideration. It follows that the examiner's rejection cannot be sustained.

The decision of the examiner is reversed.

REVERSED

BRADLEY R. GARRIS Administrative Patent Judge	)	
TERRY J. OWENS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES

)
CATHERINE TIMM)
Administrative Patent Judge)

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